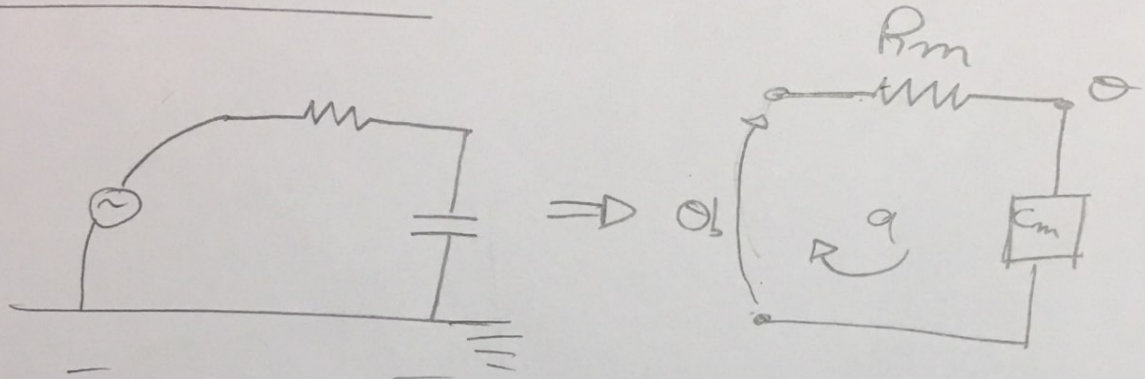
José Felipe Felix Rafael - 10333139 | 13.10.2020

PME3380.

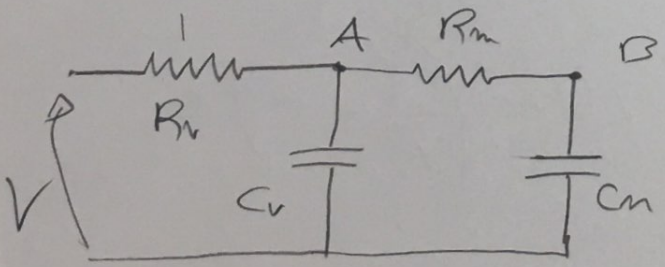
Exercício 2



$$\left(C_m D + \frac{1}{R_m}\right)\dot{\theta} - \left(\frac{1}{R_m}\right)\theta_b = 0$$

$$R_m C_m \dot{\theta} + \theta = \theta_b$$

Exercício 3



$$\begin{cases} V_A\left(\frac{1}{R_v} + \frac{1}{R_m} + D \cdot C_v\right) - V_B \cdot \frac{1}{R_m} = 0 \\ \frac{-1}{R_m} \cdot V_B - V \cdot \frac{1}{R_v} = 0 \\ V_B \cdot \left(\frac{1}{R_m} + D \cdot C_m\right) - V_A \cdot \frac{1}{R_m} = 0 \end{cases}$$

Segunda analogia

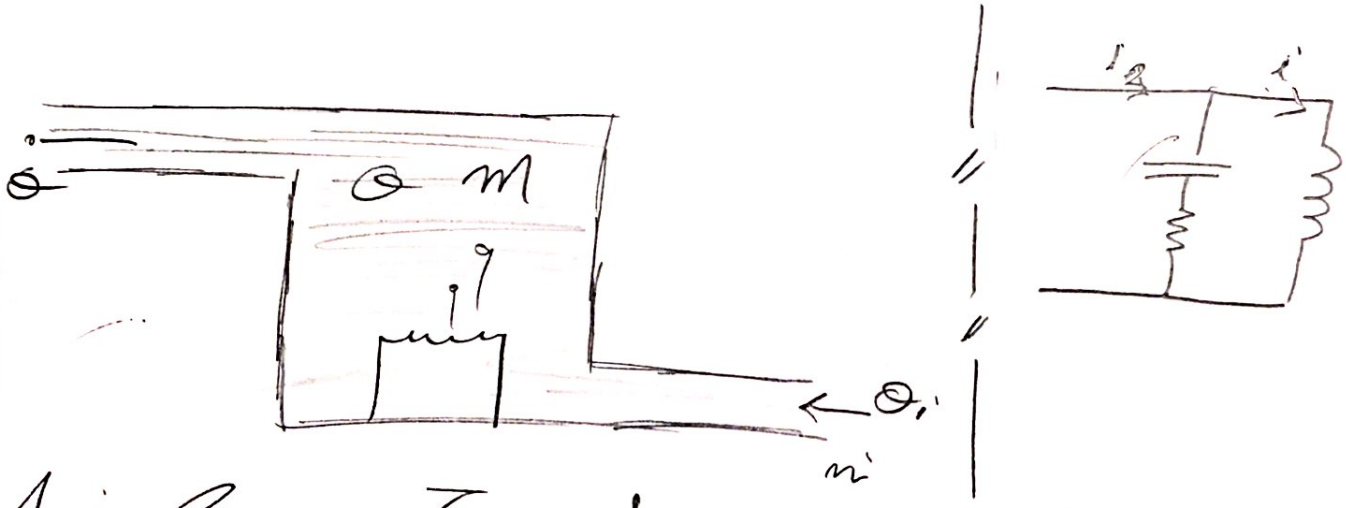
$$(i)\ \frac{\theta_A}{R_v} + \frac{\theta_A}{R_m} + \dot{\theta}_A \cdot C_v - \frac{\theta_B}{R_m} - \frac{\theta}{R_v} = 0$$

$$(ii)\ \frac{\dot{\theta}_\theta}{R_m} + \dot{\theta}_B \cdot C_m - \frac{\theta_A}{R_m} = 0$$

Continuação

$$\begin{cases} \dot{\theta}_A C_v \cdot R_v + \theta_A \left(1 + \frac{R_v}{R_m}\right) - \theta_B \cdot \frac{R_v}{R_m} = 0 \\ \theta_B C_m \cdot R_m + \theta_B = \theta_A \end{cases}$$

Exercício 4



Analogia Tipo 2.

$$L\dot{D}i + (R + C) \cdot (i - i_2) = e(t) \longrightarrow L\dot{D}\theta + \left(\frac{1}{R} + C\right) \cdot \theta = = q(t) + \left(\frac{1}{R} + C\right)\theta_i$$

$$\Rightarrow M_{cp} \cdot \dot{\theta} + \left(\dot{m} c_p + \frac{1}{R}\right)\theta = q(t) + \left(\dot{m} c_p + \frac{1}{R}\right)\theta_i$$